Postpartum Complications

Carol Petersen-Pilat, DO
COL, MC
Family Practice
Dewitt Army Community Hospital
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Objectives

- Recognize common and potentially life-threatening postpartum complications
  - Postpartum hemorrhage
  - Postpartum venothromboembolic disease
  - Postpartum fever
  - Postpartum thyroiditis
  - Peripartum cardiomyopathy
  - Postpartum blues, psychosis & depression
- Direct the initial (and possibly definitive) management of the ill postpartum patient
- Know the appropriate threshold for subspecialty consultation

Postpartum Complications

Postpartum Hemorrhage

Postpartum Hemorrhage

Definition

- greater than 500cc blood loss (vaginal delivery) or 1000cc blood loss (cesarean)
- decrease in HCT of 10 or greater
- obstetrical emergency that can follow vaginal or cesarean delivery with clinical instability leading to transfusion, shock, renal failure, acute respiratory distress, and coagulopathy

Postpartum Hemorrhage

Incidence

- 3% of all births
- 6.4% of cesarean deliveries
- 3rd most common cause of maternal mortality

Postpartum Hemorrhage

- General Approach
  - ABCs, 2 IVs, O2, T & C, urgent OB consult
  - examine and treat patient simultaneously
  - if bleed is prior to placental delivery, give oxytocin & do manual extraction
  - if bleed is after placental delivery, palpate the uterus. If evidence of atony, massage and treat
  - repair genital tract tears
  - remove retained products
  - foley catheter, CBC, coags. & treat ABNL's
  - recombinant activated factor VIIa recently approved by FDA for bleeding related to hemophilia A & B inhibitors, factor VII deficiency, and postpartum uterine atony (2 doses of 90 mcg/kg q3h)
  - if refractory to medical therapy consider surgical options

Postpartum Hemorrhage

Causes (the four T’s):

- tone
- tissue
- trauma
- thrombin

Postpartum Hemorrhage: Tone

- Etiology: uterine atony (incidence is 1 in 20 deliveries)
- Risk Factors:
  - uterine overdistension (hydramnios, multiple gestation, oxytocin use, macrosomia)
  - high parity
  - prolonged labor
  - intramniotic infection
  - tocolytics

Postpartum Hemorrhage: Tone

Treatment

- General Measures (ABC's, O2, IV crystalloids, transfusion)
- Specific Measures:
  - bimanual uterine massage, consider uterine packing
  - medications
    - Oxytocin 10-40 units/liter NS running continuously
    - Methylergonovine (methergine) 0.2mg IM q2-4 hours
    - Hemabate ® 250 mcg IM q15-90 minutes up to total dose of 2 mg
    - Misoprostol 800-1,000 mcg PR (can be given to women with asthma or HTN)
  - surgery

Mental Break

Postpartum Hemorrhage: Tissue

- Etiology
  - retained placenta (occurs in 6% of vaginal deliveries)
  - invasive placenta (1 in 2,500 pregnancies)
    - **A**ccreta: **A**dherent to myometrium
    - **I**ncreta: **I**nvades myometrium
    - **P**ercreta: **P**enetrates myometrium
- Risk Factors
  - previous peripartum curettage
  - previous cesarean
  - placenta previa
  - high parity

Postpartum Hemorrhage: Tissue

Treatment

- General Measures (ABC's, O2, IVF, transfusion)
- Specific Measures
  - manual removal with or without tocolytic
  - surgical removal

Postpartum Hemorrhage: Trauma

- Incidence: 20% of postpartum hemorrhages
- Types
  - uterine inversion
  - uterine rupture
  - birth canal trauma

Postpartum Hemorrhage: Trauma (uterine inversion)

- Incidence: 1 in 2,000 deliveries
- Presentation: bluish gray mass protruding from vagina, shock out of proportion to blood loss
- Risk Factors: macrosomia, fundal placenta, oxytocin use, primiparity, invasive placenta

Postpartum Hemorrhage: Trauma (uterine inversion)

Treatment

- General Measures (ABC's, O2, IVF, transfusion)
- Specific Measures
  - manual replacement with or without tocolytics (terbutaline or nitroglycerin) or general anesthesia
  - consider hysterectomy
  - follow replacement with oxytocin

Postpartum Hemorrhage: Trauma (uterine rupture)

- Incidence: 1 in 2,500 deliveries
  - 0.2-1.5% of women with prior low transverse cesarean incision (up to 9% for other incisions)
- Risk Factors
  - prior uterine surgery, or >1 prior C/S
  - maternal age >30 years
  - dysfunctional labor with use of induction agents
  - Inter-delivery interval <18-24 months
- Presentation
  - vaginal bleeding
  - abdominal tenderness
  - tachycardia
  - * most common sign is fetal bradycardia (sometimes preceded by variable or late decels.)
  - cessation of uterine contractions or change in uterine shape
  - increasing abdominal girth
  - hypotension and/or shock

Postpartum Hemorrhage: Trauma (uterine rupture)

Treatment

- General Measures (ABC’s, etc.)
- Repair of defect or hysterectomy (somewhat governed by desire for future fertility)

Postpartum Hemorrhage: Trauma
(birth trauma—lacerations, hematomas)

- Risk factors
  - primiparity
  - operative vaginal delivery
  - multiple gestation
  - vulvovaginal varicosities
  - inadequate hemostasis
- Treatment
  - lacerations: repair
  - hematomas
    - <3cm may observe if stable
    - if larger or unstable, incise and evacuate clot, ligate vessels, close in layers

Postpartum Hemorrhage: Thrombin

Coagulopathies account for 1% of cases of PPH

- Causes
  - congenital
  - drug-induced
  - obstetric

- Management
  - lab studies
    - PT/PTT/INR
    - fibrinogen
    - fibrin split products
    - platelets, blood count

Postpartum Hemorrhage: Thrombin

- Correct Deficiencies
  - maintain fibrinogen >100mg/ml with FFP (raises fibrinogen 10mg per 100ml of FFP)
  - reduce prolonged INR with FFP
  - maintain platelets >50K (platelet packs increase count by 5K per unit)

Postpartum Hemorrhage

General Preventive Measures

- correcting anemia prior to delivery
- episiotomies only if necessary
- active management of third stage
- assess patient after completion of paperwork to detect slow steady bleeds

Mental Break

Postpartum Complications

Postpartum Venothromboembolic Disease

Postpartum Thromboembolic Disease

Incidence

- DVT: 3 in 1000
  - ½ of postpartum DVT's occur in the first 3 days following delivery
- PE: 1 in 2700 to 7000

Postpartum Thromboembolic Disease

Pathophysiology

- pregnancy is a naturally hypercoagulable state
- pregnancy is associated with increased venous stasis
- pregnancy is associated with vascular trauma

Postpartum Thromboembolic Disease

Risk Factors

- prior venothromboembolic disease
- major surgery (including cesarean)
- operative vaginal delivery
- immobilization
- trauma or infection
- pre-existing hypercoagulable state

Postpartum Thromboembolic Disease

Signs/symptoms

- DVT
  - swelling
  - leg or abdominal pain
  - tenderness
  - warmth
  - palpable cord
  - differential calf circumference
  - leukocytosis (up to 20K is normal postpartum value)
- PE
  - tachypnea/dyspnea
  - tachycardia
  - cough
  - pleuritic chest pain
  - rales
  - hemoptysis
  - fever
  - diaphoresis
  - cyanosis
  - loud S2
  - hypotension
  - syncope

Postpartum Thromboembolic Disease

Diagnosis

- DVT
  - doppler ultrasound: 98% sensitive, 95% specific
  - venography: gold standard, only used when noninvasive test nondiagnostic
- PE
  - ABG
  - CXR
  - ECG
  - CT scan vs V/Q scan
  - pulmonary angiography

Postpartum Thromboembolic Disease

Treatment

- unfractionated heparin
- low molecular weight heparin
  - greater efficacy (for DVT in non-pregnant patient)
  - decreased risk of heparin-induced thrombocytopenia
  - decreased risk of osteoporosis

Treatment is continued 6-12 weeks post event (3 months)

Postpartum Complications

Postpartum Fever

Mental Break

Postpartum Fever (endometritis)

- Signs/symptoms
  - uterine tenderness
  - foul discharge
  - fever
  - leukocytosis (bacteremia, usually w/ one organism, occurs in 10-20% of patients
  - infection involves the decidua (pregnancy endometrium) frequently with extension into the myometrium
  - incidence for vaginal birth is <3%, but 5-10 X higher for C/S, especially if non-elective
  - antibiotic prophylaxis with cefazolin 1 gm IV or ampicillin 1-2 gm IV reduces rate of post-cesarean endometritis by 66-75%. May also use intrauterine antibiotic irrigation. Evidence is inconclusive for low-risk, scheduled cesarean.

Postpartum Fever (endometritis)

- Treatment
  - most infections are polymicrobial (aerobes and beta-lactamase-producing anaerobes from the genital tract)
  - vaginal colonization with BV or GBS can increase likelihood of endometritis by as much as 80%
  - mycoplama hominis may cause 10% of postpartum fevers (further study needed)
  - antibiotics
    - clindamycin (900 mg q 8h) plus gentamicin (1.5 mg/kg q8h) with cure rates of 90-97%
    - add ampicillin (2gm q4h) to cover resistant organisms such as enterococci
    - metronidazole (500mg PO or IV q8h may be more effective than clindamycin against gram negative anaerobes, but avoid in breastfeeding mothers)
  - treat 4-5 days, continue 1-2 days past defervescence, with orals if staph. bacteremia

Postpartum Fever (endometritis)

- Treatment (continued)
  - 10% will not respond in 48-72 hours
  - look for other source of fever (pelvic abscess, septic pelvic thrombophlebitis, drug-induced fever, wound infection, retained products of conception)
  - consider resistant organism and broaden coverage appropriately

Postpartum Fever (septic pelvic thrombosis)

- Incidence
  - 1 in 13,000 vaginal deliveries
  - 1 in 400 cesarean deliveries
  - striking predilection for postpartum women (fulfills Virchow's triad of thrombotic factors: hypercoagulability, vein wall changes, and slow flow)
- Diagnosis
  - persistence of spiking, "picket fence" fevers, in absence of pain, despite antimicrobial therapy
  - blood CX's usually negative
  - measurement of clotting factors not fully studied
  - all currently available imaging techniques are insensitive

Postpartum Fever (septic pelvic thrombosis)

- Treatment
  - Broad-spectrum antibiotics with activity against streptococci, enterobacteriaceae, and anaerobes
  - Surgical ligation of involved veins associated with high morbidity/mortality
  - Previously treated with heparin, although recent studies show no benefit
  - Resolves by 6-7 days on antibiotics with or without heparin

Postpartum Fever (wound/perineal infections)

- Wound infections
  - cesarean incision infection rate 3 to 15%, decreases to 2% with prophylactic antibiotics
  - infections usually polymicrobial
- Perineal infections
  - incidence: 0.05 to 0.5% of vaginal deliveries
  - treatment: debridement, removal of sutures, drainage, antibiotics
  - complications: necrotizing fasciitis, sepsis

Postpartum Thyroiditis

- Incidence
- 3-16% of PP women, 25% in Type II diabetics
- 20-30% hyperthyroid 1-4 mos. PP for 2-8 wks., becoming hypothyroid for 2-8 wks., then recovering
- 20-40% hyperthyroid, only (can persist in 25-50% cases)
- 40-50% hypothyroid, only, occurring 2-6 mos. PP

Postpartum Thyroiditis

- Manifestations include anxiety, weakness, irritability, palpitations, dry skin, low energy
- Diagnosis
- Minimal thyromegaly without ophthalmopathy
- High or high NL T4 & T3, low TSH, low uptake
- 65-85% have high thyroid Ab’s

Postpartum Thyroiditis

- Treatment

  Majority require no treatment except for bothersome Sx's of hyperthyroidism (use B-blockers except in nursing pts.), or symptomatic hypothyroidism (use levothyroxine)

  Rx on clinical, not biochemical, grounds

  Re-evaluate q6-12 mos.

Peripartum Cardiomyopathy

- Definition
- Onset of cardiac failure in 3rd trimester or within 5 mos. PP
- Absence of identifiable cause
- Absence of pre-existing heart dz.
- LV systolic dysfunction

Postpartum Cardiomyopathy

- Incidence: 1 in 3,000 to 1 in 4,000 births
- Etiology
- Cause unknown
- Evidence for role of inflammatory cytokines (TNF & IL-6)
- Myocarditis suggested but not confirmed
- Familial clustering suggests genetic etiology
- Pregnant state leads to LV remodeling & hypertrophy -> ? marked decrease in LV fcn. in PPCM
- Selenium deficiency -> incr. susceptibility to viral infections & HTN

Postpartum Cardiomyopathy

- Risk Factors
- >30 y/o, multiparity, multiple gestation
- AA descent
- H/O prenatal or PP HTN
- >4 weeks oral tocolytics w/ adrenergic agents

Postpartum Cardiomyopathy

- Diagnosis
- EKG
- CXR
- echocardiogram
- Cardiology referral for possible cath. or BX

Postpartum Cardiomyopathy

- Treatment
- Similar to other types of CHF = digoxin, diuretics, sodium restriction, B-blockers, afterload reduction
- Avoid nitrates & ACE inhibitors
- Consider anti-coagulation w/ heparin if pre-delivery (due to short half-life & reversibility), but may use Coumadin during 3rd trimester & beyond, w/ INR goal of 2.0 to 2.5
- Use of IVIG has been studied = >10% increase in EF
- Consider cardiac transplant if other measures fail to stabilize pt.

Postpartum Blues

- Transient & mild mood swings w/ irritability, anxiety, poor concentration, insomnia
- Incidence is 40-80% of PP women within 2-3 days of delivery, peaking on Day # 5, resolving within 2 weeks
- Etiology not conclusively identified, but believed to be related to estrogen withdrawal
- Risk factors include H/O depression or PMMD, and pre-existing psychosocial impairment
- Treatment should include conservative & supportive measures, night-time baby care, discretionary use of meds. for insomnia

Postpartum Psychosis

- Incidence is 0.1-0.2%
- Typically presents within 2 weeks of delivery w/ mania, depression or schizoaffective disorder, which could endanger pt. or newborn.
- This is a MEDICAL EMERGENCY which mandates an immediate psychiatric consult

Postpartum Depression

- Onset within first month PP
- Incidence 5-9% (similar to that in non-pregnant women), but may be under-reported
- Risk factors include antenatal depression or psychiatric FH, marital conflict, unplanned pregnancy, previous miscarriage, deferral of breastfeeding, hyperemesis gravidarum, congenital fetal ABNL's
- Etiology is probably multifactorial: genetic susceptibility, hormonal changes, major life stressors. PP period increases vulnerability.

Postpartum Depression

- Symptoms include changes in somatic functions (sleep, energy, appetite, weight, GI fcn., insomnia unrelated to newborn's sleep pattern), guilt, anxiety, anger, loss of bonding w/ newborn, and obsessional thoughts of harming oneself or baby.
- Screening w/ Edinburgh Postnatal Depression Scale (10-item self-report) is 5X more sensitive than routine clinical eval. Responses are scored 0,1,2 or 3 w/ max. score of 30 (scores >12 = PP depression)

Postpartum Depression

- Pre-Treatment Evaluation should include CBC, TSH, renal & liver fcn., urine tox. screen, & screening for use of OTC's incl. herbals
- Treatment
  - Use biopsychosocial approach
  - Restore sleep, suggest light therapy
  - Pharmacotherapy can include SSRI's, SNRI's such as Paxil, Celexa, Effexor, Lexapro, Zoloft, Prozac and Trazadone or Wellbutrin for insomnia
  - Limited data on hormonal therapy
  - Psychotherapy recommended
  - Social services intervention as needed

www.depressionafterdelivery.com (1-800-944-4773)

www.postpartum.net (1-805-967-7636)

KEY: PREVENTION of crisis in women w/ H/O PP depression or pre-existing depression

Postpartum Complications

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